1. Introduction

This chapter is undertaken to explore the modern theoretical foundations of capital structure. An attempt has been made to analyze the capital structure position of Indian industry with a view to identify the nature of funds; debt and equity, mostly used by the firms. Moreover, the study seeks to demonstrate the influential factors of capital structure of Indian industry.

Capital structure is the mix of debt and equity securities that are used to finance companies assets. It is defined as the amount of permanent short-term debt, preferred stock, and common equity used to finance a firm. Financial structure is sometimes used as synonymous with capital structure. However, financial structure is more comprehensive in the sense that it refers to, in aggregate; the amount of total current liabilities, long-term debt, preferred stock, and common equity used to finance a firm. Therefore, capital structure is only a part of financial structure, which refers mainly to the permanent sources of the firm’s financing.
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2. Objectives

The objective of the study is to examine the pattern (debt-equity mix) of asset financing by Indian companies and the influence of the various factor affecting there capital structure decisions. More specifically, the study focused on the following objectives.

(i) To assess intra and inter sectoral differences in the debt-equity structure of various industrial sectors in India.

(ii) To examine the magnitude of influence of various factors affecting the capital structure decisions of Indian companies.

3. Hypotheses framed:

Hypothesis 1:

\( H_0: \) Debt- equity ratios in various industrial sectors as well as in firms in India are similar.

\( H_1: \) Debt equity ratios among various industrial sectors as well as the firms in India differ significantly.

Hypothesis 2:

\( H_0: \) Debt- equity ratios of firms in an industrial sector are not influenced by financial variables such as size, growth, liquidity, profitability, and dividend.

\( H_1: \) Debt equity ratios of firms in an industrial sector are influenced by the underlying financial variables.

The study includes both financial and statistical tools. Hypothesis 1 was tested using the \( t \)-test and the ANOVA technique. In order to test Hypothesis 2, a multiple linear regression model was fitted.
4. Modern Theories of Capital Structure: - An overview

The optimal balance between debt and equity capital has been a critical issue in corporate finance. A number of theories have developed in the last 50 years to explain variation in the debt ratios across the firms. The theories suggest that firms select capital structure depending on attributes that determine the various costs and benefits associated with debt and equity financing.

There has been a significant contribution to the capital structure gimmicks since Modigliani and Miller (1958) showed that capital structure was irrelevant. Even though their contribution is un-doubtful, specifically speaking, evidence of the presence of capital structure can be found in the instance of corporate control, especially leveraged buyouts, hostile takeovers, and restructuring. Of the various contributions to the theory of capital structure, some of the important capital structure theories are highlighted as under:

**Modigliani and Miller hypothesis (1958):** The modern theory of capital structure began in 1958 when Franco Modigliani and Merton H. Miller (MM) published the most influential and celebrated article in the area of corporate finance. MM established that no combination is better than the other- that the firms overall market value (the value of all its securities) is independent of capital structure. According to them, under competitive competitions and perfect markets, the choice between equity financing and borrowing does not affect firm’s market value because the individual investor can alter investment to any mix of debt and equity that the investor desires. MM argued that a company’s WACC (Weighted
Average Cost of Capital) remains unchanged at all levels of gearing, implying that no optimal capital structure exists for a particular company.

• **MM Theory: Proposition I**

The first proposition of MM theory on capital structure reads as “the market value of any firm is independent of its capital structure, changing the gearing ratio cannot have any effects on the company’s annual cash flow”. The total market value of the firm and its cost of capital are independent of its capital structure. WACC is independent of the debt-equity ratio and equal to the cost of capital which the firm would have with no gearing in its capital structure.

• **MM Theory: Proposition II**

The second proposition of MM theory asserts that “the rate of return required by shareholders increases linearly as the debt/equity ratio is increased, i.e., the cost of equity rises exactly in line with any increase in gearing to precisely offset any benefits conferred by the use of apparently cheap debt”. By introducing debt in capital structure, the cost of equity raises linearly to offset the lower cost of debt directly giving a constant weighted average of capital irrespective of the level of gearing.

• **MM Theory: Proposition III**

MM theory’s third proposition asserts that ‘the cut-off rate for new investment will in all cases be average cost of capital and will be unaffected by
the type of security used to finance the investment.’ The cut-off rate for investment purposes is completely independent of the way in which an investment is financed. This implies a completely separation of investment and financing decisions of the firm.

- **MM Theory: Corporate Taxation**

  MM has further modified their theory by considering tax relief available to a geared company when the debt component exists in the capital structure. The tax burden on the company will lessen to the extent of relief available on interest payable on the debt, which makes the cost of debt cheaper which reduces the weighted average capital of the firm, where capital structure of a company has debt component.

- **MM Theory: personal Taxation**

  MM theory considered only corporate taxes. It was left to a subsequent analysis by Miller (1977) to include the effects of personal, as well as, corporate taxes. He argued that the existence of tax relief on debt interest but not on equity dividends would make debt capital more attractive than equity capital to companies. The market for debt capital under the laws of supply and demand, companies would have to offer a higher return on debt in order to attract greater supply of debt. When the company offers an after personal tax return on debt at least as equal to the after personal tax return on equity, the equity supply will switch over to supply debt to the company. It is assumed that, from the angle of
the company, it will be indifferent between raising debts or equity as the effective
cost of each will be the same and there is no advantage to gearing. Miller analysed
the total supply and demand for debt by a corporate sector. The corporate sector
as a whole would be prepared to issue debt up to the point where the extra interest
paid is exactly compensated for by the tax shield on the debt interest. Suppliers of
funds would be prepared to take up debt provided that they were compensated by
a high return so that the after tax return on debt was at least equal to the after tax
return on equity. Under the modern view of capital structure decisions, the
favourable tax implications of borrowings will help reduce of average cost of
capital even the levels of leverage increases. It is based on the assumption that
interest payment on debt are allowed as a tax deduction whereas dividends on
equity capital are not allowed for tax deduction.

**James H. Scott (1977) – issuance of secured debt**

James H. Scott argued the issuance of secured debt paves the way for
increasing the total value of a firm, even in the absence of corporate taxes. He
opposed the Fama- Miller model definition of “securities” that can be protected
against action from financiers on the assumption of perfect capital markets
without affecting the value of the firm. He further argued that by issuing secured
debts, the firm could enhance the value of its securities by reducing the amount
available to pay legal damages (bankruptcy cost) and the firm attains optimal
capital structure by issuing secured debts.
Ross in his incentive – signaling hypothesis tried to modify the MM theorem on the irrelevancy of financial structure. According to him, if managers possess inside information, the choice of a managerial incentive schedule and of financial structure signals information to the market, and in competitive equilibrium the inferences drawn from the signal will be validated. The empirical implication of the theory is that in a cross section, the values of firms will rise with leverage, since increasing leverage increases the market’s perception of value. The manager of a firm maximizes his incentives by choosing a financial package that trades off the current value of the signal given to the market against the incentive consequences on that return. In equilibrium, firms are correctly distinguished by their financial choices. What matters, though, is not the particular package chosen, but rather the essential characteristics of the financial package i.e. its implications for incentives. Many seemingly distinct financial packages may actually have the same incentive properties, he argues. When a firm issues new securities, the event can be viewed as providing a signal to the financial market regarding the future prospects of the firm or the future actions planned by the firm’s managers. The signal provided by the capital structure changes are credible because of potential bankruptcy penalty incurred if the implied future cash flows do not occur.

*DeAngelo and Masulis (1980) – non-debt tax shields*
The authors tried to modify Miller’s differential personal taxes model by including corporate tax shields substitutes for debt such as accounting depreciation deduction and investment tax credit. According to them the introduction of these non-debt tax shield leads to a market equilibrium in which each firm has a unique interior optimum leverage decision due solely to the interaction of personal and corporate tax treatment of debt and equity. The presence of tax shields substitutes for debt and / or default costs and implies a unique interior optimum leverage decision in market equilibrium.

_Myers (1983) - the static trade – off theory_

According to _Modigliani and Miller_, the market imperfection leads to differential capital structure. “Managers are often viewed as trading off the tax savings from debt financing against the cost of financial distress, specifically the agency costs generated by issuing risky debt and the dead-weight costs of possible liquidation or reorganization”

The theory supports MM proposition that the value of the firm, as measured by the aggregate market value of all its outstanding securities, should not depend on leverage when assets, earnings, and future investment opportunities are held constant. In fact, the interest payments are tax deductible, which includes the firm to borrow to the margin where the present value of interest tax shields is just offset by the value of loss due to the agency costs of debt and the possibility of financial distress. The behavioral justification for the static trade –off theory is the logic that borrowing saves taxes and that heavy debt can have serious
implications. Also, the cost of financial distress is more important for firms with valuable intangible assets and growth opportunities. Mature firms, holding mostly tangible assets, should borrow more, other things being constant, than growth firms that depend heavily on R&D, advertising, and the like.

**Myers and Majluf (1984)**

*Stewart C. Myers and Nicholas S. Majluf (1984)* in their famous paper on *investment and financing policy with differential information* suggested that a firm must issue common stock to raise cash to undertake valuable investment opportunity. The management, according to them, is assumed to know more about the firm’s value than its potential investors. Investors generally do interpret the firm’s actions rationally. In their equilibrium model, they showed that firms may refuse to issue stock, and therefore may fail to obtain benefit from valuable investment opportunities. The model suggests the explanations for several aspects of corporate financing behaviour, including the tendency to rely on internal sources of funds, and to prefer debt to equity if external financing is required. They concluded that it is advantageous for companies to issue safe securities than the risky ones. For the purpose of raising external capital, firms should go to bond market but it would be preferable for them to raise equity by retention if possible. Firms whose investment opportunities outstrip cash flows and which have used their ability to issue low-risk debt may forego good investment rather than issue risky securities to finance them in the best interest of the stockholders. They are in a better position ex-ante-on average- when the firm carries sufficient financial
slack to undertake good investment opportunities as they arise. Firms can build up financial slack by restricting dividends when investment requirements are modest. Alternatively, they can build it by issuing stock in periods when the manager’s information advantage is small.

Myers (1984) - pecking order theory

The pecking order theory of capital structure states that firms have a preferred hierarchy for financing decisions. The reasons of using internal financing before resorting to any form of external funds are attributed to absence of flotation costs, and non requirement of additional disclosure of proprietary financial information leading to more severe market discipline and a possible loss of competitive advantage. Further, the firms using external funds generally follow certain sequence. Long term debt capital is considered first followed by convertible securities, preferred stock, and common stock. This order clearly reflects the motive of the financial manager to retain control over the firm, reduce the agency costs, and avoid the seemingly inevitable negative market reaction in the context of announcement fresh equity issue. Implicit in the pecking order theory are two key assumptions about financial managers. The first of these is asymmetric information, or the likelihood that a firm’s managers know more about the company’s current earning and future growth opportunities than that of outside investors. There is strong desire to keep such information proprietary. The use of internal funds precludes managers from having to make public disclosures about the company’s investment opportunities and potential profits to be realized
from investing. The second assumption is that managers will act in the best
interest of the company’s existing shareholders. They may even forego a positive
NPV project if it would require fresh issue of equity, since this would give much
of the project’s value to new shareholders at the expense of the old.

The two assumptions noted above help to explain some of the observed
behaviour of financial managers. More insight is gained by looking at how capital
markets treat the announcement of new security issues. Announcement of new
debt generally is treated as positive signal that the issuing firm feels strongly
about its ability to service the debt into the future. Announcement of new common
stock is generally treated as negative signal that the firm’s managers feel the
company’s stock is overvalued and they wish to take advantage of a market
opportunity. So it is easy to see why financial managers use new common stock as
a last resort in capital structure decisions. Just the announcement of a new stock
issue will cause the price of the firm’s stock to fall as the market participants try
to sort out the implications of the firm choosing to issue a new equity issue.

While the trade – off model implies a static approach to financing decisions
based upon a target capital structure, the pecking order theory allows the
dynamics of the firm to dictate an optimal capital structure for a given firm at any
particular point in time. A firm’s capital structure is function of its internal cash
flows and the amount of positive- NPV investment opportunities available. A firm
that has been very profitable in an industry with relatively slow growth will have
no incentive to issue debt and will likely to have a low debt- to-equity ratio. A less
A profitable firm in the same industry will likely have a high debt-to-equity ratio. The pecking order theory, however, does not explain the influences of taxes, financial distress, security issuance costs, agency costs, or the set of investment opportunities available to a firm upon that firm’s actual capital structure. It also ignores the problems that can arise when a firm accumulates much financial slack that they become immune to market discipline. In such a case it would be possible for a firm’s management to preclude ever being penalized via a low security price and, if augmented with non financial take-over defenses, immune to being removed in a hostile acquisition. For these reasons the pecking order theory is considered as a complement to, rather than a substitution for, the traditional trade-off model.

**Fama and Jensen (1985) – organizational theory**

Fama and Jensen studied the relation between the characteristics of the residual claims of different organizational forms and rules for investment decisions. According to them, different restrictions on residual claims generally lead to different decisions rules.

The investment decisions of open corporations; financial, mutual fund and non profit organizations can be modeled by the value maximization rule except for proprietorship, partnership and closed corporations. The theory explains debt financing brings good news for stockholders. It predicts that a firm will not undertake debt for equity changes except in the case of a takeover. Firms’ high
debt ratios give *signal* to prevents them from considering the proposals pertaining to capital investments or acquisitions with negative NPV.

**Titman and Wessels (1988) – determinants of capital structure**

*Sheridan Titman and Roberto Wessels* used the linear structural modeling technique to empirically analyse the *determinants of capital structure* with separate measures for short-term debt, long-term debt and convertible debts compared to the aggregate measures of debt used in the previous studies.

The researchers established that firms with unique or specialized products have relatively low *debt equity* ratios. Uniqueness is characterized by the firm’s expenditures on research and development, selling expenses, and the rate at which the employees voluntarily leave their jobs. Smaller firms tend to use significantly shorter – term debt than the larger firms do. Profitable firms have relatively *little debt* relative to the market value of their equity. Their findings therefore have important implications for the present study in the sense that profitability is inversely related to the debt and therefore it must be factored in the model. Also, their results indicated that *transactions costs* may be considered as an important determinant of the capital structure choice. However, their effect is *miniscule*. On the other hand, the study emphasized that short term debt ratios are inversely related to firm size. This reflects small firm faces hurdle in issuing long term financial instrument due firm *transaction cost*. 
**Harris and Raviv (1991) – industry membership and capital structure:**

differential voting rights of shareholders and bondholders

*Milton Harris and Arthur Raviv* examined the relation between leverage and managerial voting right control. They suggested that management could change the fraction of the votes it controls through capital structure changes. They identified four categories of determinants of capital structure, which they expressed as the desire to

- Ameliorate conflicts of interest among various groups with claims to the firm’s resources, including managers
- Convey private information to capital markets or mitigate adverse selection effects
- Influence the nature of products or competition in the product or
- Affect the outcome of corporate control contests.

**Sunder and Myers (1999) – testing the pecking order hypothesis**

*Lakshmi Shyam Sunder and Stewart C. Myers* empirically tested the pecking order hypothesis of capital structure. They established that a simple pecking order model explains much more of the time-series variances in actual debt ratios rather than a target adjustment model based on the static trade-off theory. The pecking order theory fails if actual financing follows target-adjustment specification. An important observation emerged from the study was that pecking order performance sometimes does occur strongly since the firms’ find unanticipated
deficits with debt in the short run. They recommended that the firm would make planning to finance the anticipated deficit with debts.

**Graham and Harvey (2001) – informal factors affecting capital structure**

It was found that informal factors such as financial flexibility and credit ratings play the most important role in the *debt policy* of the firm. The EPS dilution and recent stock price appreciation are the other important factors *influencing* the fresh issue of common stock. However, they viewed that financial managers use the *literature* on capital structure *occasionally* while taking investment decisions for the firm.

**Glimpse of the findings of the theories**

Capital structure decision relates to finding out an *optimum level* of debt that a firm must have in order to *maximize* its value. There are two opposite schools of thoughts regarding optimum capital structure. One school of thought believes that the value of the firm is dependent upon its *capital structure*. The opposite school of thoughts argues that *capital structure* is irrelevant to the value of the firm.

Prior to MM, no capital structure theory existed, so there was no systematic way of analyzing the effects of debt financing. In 1958, *Franco Modigliani and Merton Miller (MM)* proved, under a restrictive set of assumptions including zero taxes, that *capital structure* is irrelevant; that is, according to the original MM article, a firm’s value is not affected by its financing *mix*. MM later added
corporate taxes to their model and reached the conclusion that capital structure does matter. MM’s model with corporate taxes demonstrated that the primary benefit of debt stems from the tax deductibility of interest payments. Later Miller extended the theory to include personal taxes. The introduction of personal taxes reduces, but does not eliminate, the benefits of debt financing. Most experts believe that the relationship between value and leverage is relatively flat over a fairly broad range, so large deviations from the optimal capital structure without materially affecting the stock price. In considering signaling theory, because of asymmetric information, investors know less about a firm’s prospect than its managers know. The pecking order theory of capital structure states that firms have a preferred hierarchy for financing decisions. Long term debt capital is considered first followed by convertible securities, preferred stock, and common stock. This order clearly reflects the motive of the financial manager to retain control over the firm, reduce the agency costs, and avoid the seemingly inevitable negative market reaction in the context of announcement fresh equity issue.

Therefore, in a nut-shell we may conclude that the great contribution of the capital structure models developed by MM, Miller and their followers is that these models identified the specific benefits and costs of using debt- the tax benefits and so on. In respect of determinants of capital structure; it has been observed from the view point of aforesaid literature survey that firms with specialized products have relatively low debt equity ratios. Comparatively smaller firms tend to use significantly shorter – term debt than the larger firms do.
Profitable firms have relatively little debt relative to the market value of their equity.

Therefore, the present study emphasizes to make a comprehensive study in determining the factors influencing the capital structure of Indian industry with latest data of Indian corporate sector.

5. Leverage: Definition

Leverage has been defined as “the action of a lever, and the mechanical advantage gained by it”. It is the principle that permits the magnification of force when a lever is applied to a fulcrum. On the other hand a lever is used to magnify the effect of force applied at one point to another point. Leverage is referred to as use of a lever. In the financial world, leverage can be defined as the influence of fixed expenses over the operating cash flow or earnings. Fixed expenses can be used as a lever to magnify the operating cash flows and earnings. The term leverage refers to an increased means of accomplishing some purpose. With leverage it is possible to lift objects, which is otherwise impossible. The term refers generally to circumstances, which brings about an increase in income volatility. In business, leverage is the means of increasing profits. It may be favorable or unfavorable. The leverage of a firm is essentially related to a profit measure, which may be a return on investment or on earning before taxes.
5.1 Types of leverage

Leverage can be broadly classified into two types as Operating Leverage, Financial Leverage.

- **Operating Leverage**

  Operating leverage defined as change in *earning before interest and taxes* (EBIT) due to change in *sales*. If all the costs of the product are variable, the expected percentage change in the income before taxes will be equal to the percentage change in sales. Operating leverage is concerned with the operation of any firm. The cost structure of any firm gives rise to operating leverage because of the existence of fixed nature of costs. This leverage relates to the sales and profit variations. Operating leverage is the responsiveness of firm’s *earning before interest and taxes* to the changes in *sales* value. It refers to the sensitivity of operating profit before interest and tax to the changes in quantity produced and sold. The firm’s operating leverage would be higher if the firm has high quantum of fixed cost and low variable cost. The low operating leverage represents the high variable cost and low fixed cost. If the operating leverage of the firm is higher, the more its profits will vary with a given percentage in *sales*. The operating leverage is an attribute of the firm’s business risk. The operating leverage falls with the increase in sales beyond the firm’s break-even point. A company with high proportion of fixed costs to total costs will have a high operating leverage. A company with a high operating leverage will have higher break-even level. If contribution to sales ratio of a firm is high, it can achieve higher profitability at
maximum operating level. In times of recession, the high operating leverage will act as a disadvantage to the firm for the reason that lower level of operating profits due to higher fixed costs.

**Degree of Operating Leverage**

*Degree of operating leverage* is a relationship between the percentage changes in EBIT with 1% change in sales. The ability of the firm to leverage the fixed costs to achieve more than proportionate change in earnings is referred to as operating leverage. It is measured numerically by the *degree of operating leverage* (*DOL*), which is defined in the following equation

\[
DOL = \frac{\Delta EBIT/EBIT}{\Delta Sales/Sales} = \frac{\% \text{ change in EBIT}}{\% \text{ change in sales}} = \frac{Sales-Variable \text{ cost}}{Sales-variable \text{ cost}-fixed \text{ cost}} = \frac{Q(P-V)}{Q(P-V)-F}
\]

Where,

DOL = Degree of operating leverage

Q = Quantity produced and sold

P = Selling price per unit

V = Variable cost per unit

F = Operating fixed costs

A diagram showing degree of operating leverage with special features is presented below.
### Special features of DOL

- DOL always has a value in excess of 1.0. The value “1” signifies that the entire cost is variable and any change in sales will result in an equivalent change in earnings.

- The value of DOL is unique at each level of operation

- DOL is undefined at breakeven point

- Negative values of DOL signify that the firm is operating below breakeven point. They do not signify the inverse relationship.

- While operating above the breakeven point, the value of DOL declines and approaches 1 as the firm moves away from breakeven point. This is because the fixed cost per unit decreases as the number of units’ increases.
Financial Leverage

Financial leverage refers to the use of debt financing and the resultant sensitivity of the earnings available to shareholders (EPS) by the substitution of their capital with fixed charge finance. If the firm has no fixed financial charges, then any change in the levels of EBIT will be transferred to shareholders as it is. The change in the shareholders wealth would be identical to that of the change in EBIT. In such a case, all the business risk is borne by the shareholders. However if some of the equity capital is substituted by fixed charge capital, changes in earning per share will be larger as compared to all equity financing option. Replacing equity with debt leaves the risk with the remaining equity shareholders. Financial leverage indicates the effects on earnings by rise of fixed costs funds. It refers to the use of debt in the capital structure. Financial leverage arises when a firm deploys debt funds with fixed charge. The higher the ratio, the lower the cushion for paying interest on borrowings. A low ratio indicates a low interest outflow and consequently lower borrowings. A high ratio is risky and constitutes a strain on profits. This ratio is considered along with the operating ratio, gives a fairly and accurate idea about the firm’s earnings, its fixed costs and the interest expenses on long-term borrowings. The financial leverage is an indicator of responsiveness of firm’s EPS to the changes in its profit before interest and tax.

Degree of Financial Leverage (DFL)

Degree of Financial Leverage (DFL) is the percentage change in the Earning per share with 1% change in the EBIT level. The minimum value of DFL
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is 1.00. Just as fixed cost leverage the EBIT for changes in sales, as underlined under the section on operating leverage, the presence of a fixed charge in the financing of the firm leverage the EPS for a given change in EBIT. This is called financial leverage. Use of debt causes fixed charges on the capital by way of interest and since this fixed capital replaces more expensive equity, the remaining equity earns a greater return. Degree of financial leverage (DFL) is defined as highlighted in below.

\[
DFL = \frac{\Delta EPS/EPS}{\Delta EBIT/EBIT} = \frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}} = \frac{EBIT}{EBIT - I - \frac{D_p}{(1-t)}}
\]

Where,

- DFL = Degree of financial leverage
- I = Interest on long-term debt
- EBIT = Earning before interest and tax
- D_p = Preference dividend
- t = Corporate Income-tax rate

The characteristics of DFL are similar to those of DOL, as outlined in below

- DFL always has a value in excess of 1.0. The value of 1 signifies that entire funding is done through equity. The firm has no interest burden.

- A DLF value less than 1 is possible when the firm is unable to generate any income. The firm cannot meet its fixed operational cost and EBIT is negative.
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• The value of DFL is unique at each level of operation.

5.2 Measure of Leverage

The long-term financial stability of the firm may be considered as dependent upon its ability to meet all its liabilities, including those not currently payable. The ratios which are important in measuring the financial leverage of the company are as follows:

I. Debt-Equity Ratio

This ratio indicates the relationship between loan funds and net worth of the company, which is known as ‘gearing’. If the proportion of debt to equity is low, a company is said to be low-geared, and vice versa. A debt-equity ratio of 2:1 is the norm accepted by financial institutions for financing of projects. Higher debt-equity ratio of 3:1 may be permitted for highly capital intensive industries like petrochemicals, fertilizers, power etc. The higher the gearing, the more is volatile the return to the shareholders. The use of debt capital has direct implications for the profit accruing to the ordinary shareholders, and expansion is often financed in this manner with the objective of increasing the shareholders’ rate of return. This objective is achieved only if the rate of return earned on the additional funds raised exceeds that payable to the providers of the loan. The shareholders of a highly geared company reap disproportionate benefits when earnings before interest and tax increase. This is because interest payable on a large proportion of total finance remains unchanged. The converse is also true,
and a highly geared company is likely to find itself in severe financial difficulties if it suffers a succession of trading losses. It is not possible to specify an optimal level of gearing for companies but, as a general rule, gearing should be low in those industries where demand is volatile and profits are subject to fluctuation. A debt-equity ratio which shows a declining trend over the years is usually taken as a positive sign reflecting on increasing cash accrual and debt repayment. The formula of the debt-equity ratio is highlighted in below.

\[
\text{Debt equity ratio} = \frac{\text{Total Debt Capital}}{\text{Equity Paid-Up+Preference Capital+Free Reserves}}
\]

Where, total debt capital includes debenture, loans from banks and financial institutions.

**II. Shareholders Equity Ratio**

It is assumed that larger the proportion of the shareholders’ equity, the stronger is the financial position of the firm. This ratio will supplement the debt-equity ratio. In this ratio, the relationship is established between the shareholders’ fund and the total assets. Shareholders fund represent *equity and preference capital plus reserves and surplus less accumulated losses*. A reduction in shareholders’ equity signaling the over dependence on outside sources for long term financial needs and this carries the risk of higher levels of gearing. This ratio indicates the degree to which unsecured creditors are protected against loss in the event of liquidation. The ratio is calculated as follows
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\[
\text{Shareholders Equity Ratio} = \frac{\text{Shareholders Equity}}{\text{Total Assets}}
\]

III. Long term Debt to Shareholders Net worth Ratio

The ratio compares long-term debt to the net worth of the firm i.e., the capital and free reserves less intangible assets. This ratio is finer than the debt-equity ratio and includes capital which is invested in fictitious assets like deferred expenditure and carried forward losses. This ratio would be of more interest to the contributories of long term finance to the firm, as the ratio gives factual idea of the assets available to meet the long-term liabilities. The ratio is calculated as follows

\[
\text{Long term Debt to Shareholders Net worth Ratio} = \frac{\text{Long-term Debt}}{\text{Shareholders Net worth}}
\]

IV. Capital Gearing Ratio

The fixed interest bearing funds include debentures, long-term loans and preference share capital. The equity shareholders funds include equity share capital, reserves and surplus. Capital gearing ratio indicates the degree of vulnerability of earnings available for equity shareholders. This ratio signals the firm which is operating on trading on equity. It also indicates the changes in benefits accruing to equity shareholders by changing the levels of fixed interest bearing funds in the organization. The ratio is calculated as follows

\[
\text{Capital Gearing Ratio} = \frac{\text{Fixed Interest bearing Funds}}{\text{Equity Shareholder's Funds}}
\]
V. Fixed Assets to Long–Term Funds Ratio

This ratio indicates the proportion of long–term funds deployed in fixed assets. Fixed assets represent the *gross fixed assets minus depreciation* provided on this till the date of calculation. Long–term funds include *share capital, reserve and surplus and long-term loans*. The higher the ratio indicates the safer the funds available in case of liquidation. It also indicates the proportion of long-term funds that is invested in working capital. The ratio is expressed in below

\[
\text{Fixed Assets to Long–Term Funds Ratio} = \frac{\text{Fixed Assets}}{\text{Long–term Funds}}
\]

VI. Debt Service Coverage Ratio (DSCR)

The ratio is the key indicator to the lender to assess the extent of ability of the borrower to service the loan in regard to timely payment of interest and repayment of loan installment. It indicates whether the business is earning sufficient profits to pay not only the interest charges, but also the installments due of the principal amount. A ratio of 2 is considered satisfactory by the financial institution. The greater debt service coverage ratio indicates the better debt servicing capacity of the organization. The ratio is calculated as

\[
\text{DSCR} = \frac{\text{Profit after Taxes+Depreciation+Interest on Loan}}{\text{Interest on Loan+Loan repayment in a year}}
\]
VII. Debt to Total Capital Ratio

The relationship between creditors fund and owner’s capital can also be expressed in terms of another leverage ratio. This is the debt to total capital ratio. Here, the outsider’s liabilities are related to the total capitalization of the firm and not merely to the shareholders equity. It can be measured in the following way

\[
\text{Debt to Total Capital Ratio} = \frac{\text{Long term debt capital}}{\text{Permanent Capital}}
\]

Here, permanent capital comprise of total debt capital, equity capital, preference capital and free reserve.

VIII. Interest Coverage Ratio

This is also known as time- interest- earned ratio. This ratio measures the debt servicing capacity of a firm in so far as fixed interest on long term loan is concerned. It is determined by dividing the operating profits or earning before interest and taxes by the fixed interest charges on loans. A very high ratio indicates that the firm is conservative in using debt and a very low ratio indicates excessive use of debt. Further, it indicates how many times a company can cover its current interest payments out of current profits. It gives an indication of problem in servicing the debt. An interest cover of more than 7 times is regarded as safe and more than 3 times is desirable. An interest cover of 2 times is considered reasonable by financial institutions.

\[
\text{Interest Coverage Ratio} = \frac{\text{Earning before interest and taxes}}{\text{Interest}}
\]
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IX. Dividend Coverage Ratio

It measures the ability of a firm to pay dividend on preference shares which carry a stated rate of return. This ratio is the ratio of net profits after taxes (EAT) and the amount of preference dividend. Thus

\[
\text{Dividend Coverage Ratio} = \frac{\text{Earning after taxes}}{\text{Preference dividend}}
\]

It is seen that although preference dividend is a fixed obligation, the earnings taken into account are after taxes. This is because, unlike debt on which interest is a charge on the profits of the firm, the preference dividend is treated as an appropriation of profit. The ratio like the interest coverage ratio reveals the safety margin available to the preference shareholders.

5.3. Problems related to measuring of leverage

In measuring leverage, a question always arises regarding use of the market value measures of leverage or the book value? Theoretically, the market value leverage is desirable as it reflects market expectation of the firm’s future profitability and is devoid of the diversities of the accounting practices of the firms. But its limitations from empirical point of view are that its use results in significant vices. Further, Bargers has pointed out that the use of market value measure of leverage could introduce a serious bias into the regression analysis. Therefore, to avoid such a bias, leverage is computed at book values in this study. In practice also the investment community uses the book value measures of
leverage. (Solomon; 1963). The use of book value measure of leverage in the empirical works has also been supported by Beranek and Brigham and Gordon.

Therefore, it is seen that leverage may be measured by different way but as the present study mainly concentrate on to examine the proportions of debt-equity mix using by the Indian sample firm under different industrial groups, hence we used debt-equity ratio for the analysis. Further the debt-equity ratio also used by the earlier researchers in their study.

6. Nature of leverage in the sample company

Before analyzing the nature of leverage of Indian firms, it is necessary to look into the number of firms under different industrial group forming the sample. It is worth mentioning that the firms are selected on the basis of market capitalization as on 2007. The Capital line database was used in this respect.

Table 3.2 Distribution of Sample companies

<table>
<thead>
<tr>
<th>Industry</th>
<th>No. of Companies</th>
<th>Pc of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>12</td>
<td>7.95%</td>
</tr>
<tr>
<td>IT</td>
<td>12</td>
<td>7.95%</td>
</tr>
<tr>
<td>Construction</td>
<td>12</td>
<td>7.95%</td>
</tr>
<tr>
<td>Pharmaceutical</td>
<td>16</td>
<td>10.58%</td>
</tr>
<tr>
<td>Cement</td>
<td>10</td>
<td>6.62%</td>
</tr>
<tr>
<td>Electricity</td>
<td>12</td>
<td>7.95%</td>
</tr>
<tr>
<td>Engineering</td>
<td>10</td>
<td>6.62%</td>
</tr>
<tr>
<td>Steel</td>
<td>15</td>
<td>9.93%</td>
</tr>
<tr>
<td>Auto</td>
<td>13</td>
<td>8.61%</td>
</tr>
<tr>
<td>Chemical</td>
<td>11</td>
<td>7.28%</td>
</tr>
<tr>
<td>Personal Care</td>
<td>8</td>
<td>5.30%</td>
</tr>
<tr>
<td>Finance &amp; Inv.</td>
<td>10</td>
<td>6.62%</td>
</tr>
<tr>
<td>Diversified</td>
<td>10</td>
<td>6.62%</td>
</tr>
</tbody>
</table>

Source: Capital line Database
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It is found that almost equal number of companies was selected in each group of industries. To determine the nature of capital structure of the sample companies we have calculated debt equity ratio of individual company pertaining to the year of reference. Thereafter, average of debt equity ratio was calculated using simple Geometric Mean. The following table exhibits average value of debt equity ratio for all the period highlighting the extent of leverage of the industry.

Table 3.3 Nature of Capital Structure of Sample Industries

<table>
<thead>
<tr>
<th>D/E Ratio</th>
<th>Industry</th>
<th>Extent of leverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 0.5</td>
<td>IT (0.295), Engineering (0.40), Personal Care (0.361)</td>
<td>Low</td>
</tr>
<tr>
<td>0.5 to 0.99</td>
<td>Energy (0.836), Pharmaceutical (0.671), Chemical (0.867)</td>
<td>Medium</td>
</tr>
<tr>
<td>1.0 to 1.49</td>
<td>Electricity (1.04), Autogroup (1.484), Diversified (1.08)</td>
<td>Average</td>
</tr>
<tr>
<td>1.5 &amp; above</td>
<td>Construction (1.537), Cement (1.578), Steel (2.161), Finance &amp; Inv. (4.079)</td>
<td>High</td>
</tr>
</tbody>
</table>

Source: Self compiled; Figures in parenthesis indicate debt to equity ratio.

The table exhibits that, the debt equity ratios of the industrial sectors covered in the study lie within the range of 0.295-4.079. The lowest ratio (0.295) observed in the case of IT industry and the highest in Finance & Investment (4.079) sector. However, in the Finance & Investment industry, significant variations in debt-equity ratio were noticed among the firms. High debt ratios were seen in Sriram Transport Finance Company Limited and Shriram City Union Finance Limited. The Cement industry is also subject to large variations in the debt ratios. But it was found that much of this is attributed to JK Lashmi Cement Ltd having very high debt ratios.
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The Personal Care industry is one with least borrowing; the mean ratios were 0.361. As related to individual classification a slightly high ratio was seen for Emami Ltd industries with 0.782. The I T industry is one of the cash rich industries with low borrowings. Most of the project in this industry is financed through equity which has resulted in low debt ratio. The Wipro Ltd, for example has comparatively low borrowings with average value of 0.018 indicating its rigidness in capital structure decision may be due to strong internal fund generating capacity that met the capital requirements of its needed expansion.

The Electricity and Auto industries sectors witnessed uniform leverage across the firms. The firms in both the sectors are maintaining the standard norms of debt-equity ratio as the average value of the sectors are 1.040 and 1.484 respectively. It implies that the equity capital as well as debt capital in designing capital structure holds more or less equal importance throughout the period under study.

The average value of debt-equity ratio of Construction sector is 1.537 which signifies borrowed capital is 1.5 times of equity capital. The DLF Ltd., Jaiprakash Associates Ltd and Simples Ltd industries witnessed high debt ratios; where debts are double to the equity capital in the capital structure.

The average value of debt-equity ratio of engineering industry is 0.40. Except Reliance Industrial Infrastructure Ltd and Sanghvi Movers Ltd, all other firms under this group have witnessed low debt equity ratio.
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The average debt equity ratio in the Energy industry is 0.836 which is well below than 1.00. High leverage has been seen in Mangalore Refinery and Petrochemical Ltd, Chennai Petroleum Corporation Ltd and Gujrat Ltd.

High debt ratios were seen in the Steel sectors. Essar Steel Ltd is the only company which is using high value of debt ratio of 13.712 indicating that the company is heavily relying on borrowed capital, although during study period there has been a declining trend of the ratio. In the diversified sector, the leverage ratios were found to be high and significant differences were noticed among the sample firms.

Pharmaceutical and chemical industries have witnessed a low debt ratio over the period under study. Except a few firms, the companies under this industry are maintaining low debt ratios. The chemical sector in this respect is not an exception. The debt-equity ratio of the sample companies was classified and exhibited in the following table.

Table 3.4: DE Ratio: Industry wise and firm wise distribution

<table>
<thead>
<tr>
<th>Industry</th>
<th>1.5 and above</th>
<th>From 1 to 1.5</th>
<th>Below 1.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>1(8%)</td>
<td>2(17%)</td>
<td>9(75%)</td>
</tr>
<tr>
<td>IT</td>
<td>Nil</td>
<td>Nil</td>
<td>12(100%)</td>
</tr>
<tr>
<td>Construction</td>
<td>5(42%)</td>
<td>3(25%)</td>
<td>4(33%)</td>
</tr>
<tr>
<td>Pharmaceutical</td>
<td>1(6%)</td>
<td>4(25%)</td>
<td>11(69%)</td>
</tr>
<tr>
<td>Cement</td>
<td>2(20%)</td>
<td>4(40%)</td>
<td>4(40%)</td>
</tr>
<tr>
<td>Electricity</td>
<td>2(17%)</td>
<td>1(8%)</td>
<td>9(75%)</td>
</tr>
<tr>
<td>Engineering</td>
<td>Nil</td>
<td>2(20%)</td>
<td>8(80%)</td>
</tr>
<tr>
<td>Steel</td>
<td>8(53%)</td>
<td>3(20%)</td>
<td>4(27%)</td>
</tr>
<tr>
<td>Auto</td>
<td>1(8%)</td>
<td>2(15%)</td>
<td>10(77%)</td>
</tr>
<tr>
<td>Chemical</td>
<td>3(27%)</td>
<td>1(9%)</td>
<td>7(64%)</td>
</tr>
<tr>
<td>Personal Care</td>
<td>Nil</td>
<td>Nil</td>
<td>8(100%)</td>
</tr>
<tr>
<td>Finance &amp; Investment</td>
<td>9(90%)</td>
<td>Nil</td>
<td>1(10%)</td>
</tr>
<tr>
<td>Diversified</td>
<td>2(20%)</td>
<td>3(30%)</td>
<td>5(50%)</td>
</tr>
<tr>
<td>Aggregate</td>
<td>34(23%)</td>
<td>25(17%)</td>
<td>92(60%)</td>
</tr>
</tbody>
</table>

Source: Self Compiled
It is manifested from the table that 60% of the sample companies accounted *debt-equity ratio* below one which means maximum numbers of companies of the sample are equity capital oriented. The companies under IT and Personal Care sector depend on internal source of funds. The industries like *Energy, Pharmaceutical, Electricity, Engineering, Auto, and Chemical* are mostly using equity capital and also depending on internal source of funds. The companies under *finance and investment* sector are depending on borrowed capital rather than issuing more equity capital. Reliance Capital Ltd. is the only financing company of the sample which accounted lower amount of borrowed capital in its capital structure. Thus, it is seen that *debt-equity* ratio of 60 percent of sample companies across the industry falls below 1.0, 17 percent are within the range of 1-1.5 and rest are categorized under the group of debt-equity ratio of 1.5 and above. This clearly shows that, companies are mostly depending on their internal source of fund. Further, the industry emerged in the recent years; IT, and Personal Care are equity oriented than that of the others. Besides, the market regulations, SEBI & MOF have boosted the primary issue market by introducing host of incentives and investors protection measures which ultimately led to increasing in the pace of growth of industrial finance in the country. The corporate sectors rushed to capital market and used IPO mode of raising finance.

7. **Inter company variation within different sector**

To study the inter companies variation in respect of *debt-equity* ratio within the industry we used *ANOVA* technique. We considered the null hypothesis that *there is no significant difference between the leverages of companies within a*
particular industry. The analyses were performed for each of industry separately and the results are demonstrated in the following table.

Table 3.5: Result of ANOVA analysis

<table>
<thead>
<tr>
<th>Industry</th>
<th>F value</th>
<th>F critical value</th>
<th>df (k-1, N-k)</th>
<th>No. of companies in the sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>6.012717</td>
<td>2.053902</td>
<td>(11.48)</td>
<td>12</td>
</tr>
<tr>
<td>I T</td>
<td>40.87752</td>
<td>2.053902</td>
<td>(11.48)</td>
<td>12</td>
</tr>
<tr>
<td>Construction</td>
<td>2.671943</td>
<td>2.053902</td>
<td>(11.48)</td>
<td>12</td>
</tr>
<tr>
<td>Pharmaceutical</td>
<td>8.12077</td>
<td>1.825587</td>
<td>(15.64)</td>
<td>16</td>
</tr>
<tr>
<td>Cement</td>
<td>20.91047</td>
<td>2.124029</td>
<td>(09.40)</td>
<td>10</td>
</tr>
<tr>
<td>Electricity</td>
<td>1.209985</td>
<td>2.053902</td>
<td>(11.48)</td>
<td>12</td>
</tr>
<tr>
<td>Engineering</td>
<td>15.59859</td>
<td>2.124029</td>
<td>(09.40)</td>
<td>10</td>
</tr>
<tr>
<td>Steel</td>
<td>1.869915</td>
<td>1.860244</td>
<td>(14.60)</td>
<td>15</td>
</tr>
<tr>
<td>Auto</td>
<td>1.050634</td>
<td>1.943619</td>
<td>(12.52)</td>
<td>13</td>
</tr>
<tr>
<td>Chemical</td>
<td>11.0565</td>
<td>2.053902</td>
<td>(10.44)</td>
<td>11</td>
</tr>
<tr>
<td>Personal Care</td>
<td>2.941075</td>
<td>2.312738</td>
<td>(07.32)</td>
<td>8</td>
</tr>
<tr>
<td>Finance &amp; Inv.</td>
<td>22.43942</td>
<td>2.124029</td>
<td>(09.40)</td>
<td>10</td>
</tr>
<tr>
<td>Diversified</td>
<td>2.946772</td>
<td>2.124029</td>
<td>(09.40)</td>
<td>10</td>
</tr>
</tbody>
</table>

Figures in bold indicate significant at 5% level, N = Number of years, k = Number of companies

It has been observed that the $F$-values for the selected industrial sectors except Electricity and Automobile were found to be greater than the table values. Therefore, the null hypothesis that the debt equity ratios of firm in an industrial sector are similar was rejected. A significant variation was noticed among firms in case of Finance & Investment, Cement and I T industry as the calculated value of $F$-statistic is higher than the table value. In other words, capital structure of Indian industries is not similar. The firms within the industry have employed capital of different magnitude based on their nature and growth over the years.
8. Inter industry variation

To study the inter industry variation in respect of financial leverage we used ANOVA technique to examine that whether debt-equity ratios are varying from industry to industry. The results are exhibited in the following table.

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>F₀.₀₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Companies</td>
<td>61.1228</td>
<td>12</td>
<td>5.093567</td>
<td>7.809338</td>
<td>1.943619</td>
</tr>
<tr>
<td>Within years</td>
<td>33.91651</td>
<td>52</td>
<td>0.652241</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>95.03931</td>
<td>64</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is observed that $F > F₀.₀₅$ which implies that the debt-equity ratios of different industry are not similar. Therefore, the null hypothesis was rejected and it is concluded that debt ratios differ significantly across industrial sectors in India. The reasons for the differences may be attributed to the inherent characteristics of the firms particularly in the context of their financing pattern i.e, debt equity mix. Thus, financing structure differs firm wise as well as industry wise. This implies that single jacket does not fit to all and capital structure differs in industry as well as companies wise due to host of several factors.

9. Financial leverage (debt-equity ratio) Vs other variables

To determine the factors influencing the leverage we conducted correlation matrix analysis to see the existence of interrelationship between leverage and the intervening variables. In this respect we have considered variables $CR$ (Current
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Ratio), Sales volume, Capital employed, Ent. Value (Enterprises Value), Book value of share, growth in PAT (growth in profit after tax), growth in Mcap (growth in market capitalization), EPS (earning per share), RONW (return on net worth), ROC (return on capital), DPR (dividend payout ratio).

Further, multiple regression analysis was used to assess the determinants of companies’ performance on the capital structure of companies. But because of collinearity problem we used leverage (debt-equity) as dependent variable and the variables like size (capital employed), growth (profit after tax), and liquidity (CR), profitability (RONW), dividend (DPR), as independent variable. The correlation results are displayed as under.

Table 3.7 Correlation Coefficient: DE ratio vs. Other Variable

<table>
<thead>
<tr>
<th>Variables</th>
<th>Value of r</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR</td>
<td>.295**</td>
<td>.001</td>
</tr>
<tr>
<td>Sales Volume</td>
<td>-.070</td>
<td>.393</td>
</tr>
<tr>
<td>Capital employed</td>
<td>-.012</td>
<td>.888</td>
</tr>
<tr>
<td>Book value per share</td>
<td>-.126</td>
<td>.122</td>
</tr>
<tr>
<td>Enterprises. value</td>
<td>-.106</td>
<td>.195</td>
</tr>
<tr>
<td>EPS</td>
<td>-.173*</td>
<td>.034</td>
</tr>
<tr>
<td>ROC</td>
<td>-.311**</td>
<td>.000</td>
</tr>
<tr>
<td>RONW</td>
<td>-.142</td>
<td>.082</td>
</tr>
<tr>
<td>DPR</td>
<td>-.170*</td>
<td>.037</td>
</tr>
<tr>
<td>Grw. Mcap.</td>
<td>.151</td>
<td>.065</td>
</tr>
<tr>
<td>Grw. PAT</td>
<td>.197*</td>
<td>.016</td>
</tr>
</tbody>
</table>

Source: Self Compiled, ** Significant at 1%, *Significant at 5%

It is found that variables like liquidity ratio (CR), Earning per Share (EPS), ROC, DPR and Growth of PAT have emerged as significant variables affecting
debt-equity ratio of the firm. It implies that leverage of the firm is affected by companies’ solvency, profitability and size. The following paragraphs are devoted to analyse how far these findings pertaining to selected variables are similar to the findings of the previous studies.

**Size:** We defined size of the firm by *capital employed*. The controversy in capital structure as to the relationship of *size to leverage* was confirmed. The correlation value between capital employed and debt-equity ratio was found to be -0.012 and not statistically significant. This refuses the earlier assumptions that size has a positive correlation with the debt ratio. However, the findings of *Fisher, Heinkel and Zechner (1989)* suggest that firm’s size is significant predictor of leverage. However, the *size of the firm has no significant impact on the financial leverage of the firms* as per the sample is concerned.

**Growth:** Growth defined in terms of *change of profit after tax over the years*. It was found the ‘r’ is positive and statistically significant. This implies that growing firm with proven profitability, rely more on debt than that of less growing firms which have better access to equity sources. *Titman Wesseb (1988)* argued that equity–controlled firms have a tendency to invest sub optimally to expropriate wealth from a firm’s bondholders. The cost associated with this agency relationship is likely to be higher for firms in growing industries which have more flexible in their choice of new investments. Expected future growth should thus, be negatively related to long term debt levels. *Myers (1977)* suggested that the agency problem could be tackled if the firm issued short term
debts rather than long term debts. *Jensen and Meckling (1976)* and several others also established that agency cost be reduced if firm adopt the issue convertible debts.

**Profitability:** We measure profitability by RONW defined earlier. The correlation value for RONW and debt-equity is -0.142 and is not statistically significant either at 1% or 5% level. It suggests that there is no relationship between degree of *leverage and financial profitability* of the firm. Similar findings were obtained in the *Packing order* hypothesis of *Myers and Majluf (1984).*

**Liquidity:** The correlation coefficient between liquidity (CR) and DE ratio is found to be 0.295 and statistically significant at 1% level. This indicates a positive impact of the *leverage on liquidity* of sample companies. The existence of relationship implies less risky firms having high liquidity ratio always prefer long-term debt rather than financing from equity sources.

**Dividend:** The correlation coefficient between DPR (dividend) and debt-equity ratio is -0.170 and statistically significant. This indicates that the *dividend* is an influential factor for designing *capital structure* of a firm. It suggests the companies with maximum long term debt capital are distributing more amount of dividend among the shareholders as compared to companies emphasizing internal source of funds.
To identify the influence of each or such intervening variables relating to the performance of the firm regression line has been fitted considering debt-equity ratio as dependent variable while others (only a those are significantly correlated to debt-equity ratio) i.e, liquidity (CR), dividend (DPR), and growth (PAT) as independent variable.

The following model has been fitted for the analysis.

\[ Y_i = \alpha + \beta_i x_i + u_i \]

Here ,

\[ H_0 : \beta_i = 0 \text{ and } H_1 : \beta_i \neq 0 \]

**Table 3.8 Regression Summary: Leverage (D/E ratio) as dependent variable**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t-value</th>
<th>Sig. p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>.378</td>
<td>.293</td>
<td>1.292</td>
<td>.198</td>
</tr>
<tr>
<td>CR</td>
<td>.366</td>
<td>.108</td>
<td>.265</td>
<td>3.398</td>
</tr>
<tr>
<td>DPR</td>
<td>-.007</td>
<td>.005</td>
<td>-.105</td>
<td>1.323</td>
</tr>
<tr>
<td>PAT</td>
<td>.004</td>
<td>.001</td>
<td>.196</td>
<td>2.480</td>
</tr>
</tbody>
</table>

\[ R^2 = 0.245, \ F= 6.996**, (.000), **Significant at 1%, * Significant at 5% \]

The R squared for the equation was found to be 0.245 that is explanatory variables explains hardly 25% of variation in dependent variable. This indicates a very weak prediction for the variables. *Prima facie* the result of the regression analysis on various determinants of the coefficient of capital structure, in majority, was found to be consistent with the various research findings. However, there were certain exceptions, which need to be explored further. A major findings on the attribute of various explanatory variable used in the regression model is that the variables like liquidity and growth in terms of performance of the firm
have significant influence on debt-equity ratio. In other words, sustainable growth along with credit worthiness of the firm influences debt-equity ratio, i.e., degree of financial leverage. The firms generally look forward for more debts in its capital structure when it has been attaining a sustainable growth with higher degree of liquidity and proven profitability. It could contain risks of debts in the capital structure.

10. Conclusion

From the foregoing analysis, significant variations have been observed in the debt-equity ratio in the industrial sector selected for the purpose of the study. The Finance & Investment sector showed the highest in terms of financial leverage and IT, Engineering and Personal sector, the lowest. In the context of determination of appropriate constituents of capital structure most of the findings of the study are consistent with those of the earlier studies. However, a few are diametrically opposite, especially in the Indian context. The size of the firm was found not related with the leverage. This refuses the earlier research findings, which established a positive relationship between size and leverage ratios. It was found that increase in the total assets might not necessarily be financed by debt as it is used to be in earlier research studies. To support this argument, the behaviour of the indicator of growth can provide some evidence. It implies that the proportion of debt finance goes down when the total assets increase. The profitability of the firm was also found to be not related with leverage and this is inconsistent with the findings of the earlier research studies. The study support
that the growth of firm is a significant factor influencing the capital structure of firm. The regression coefficient of growth in terms of profit after tax is 0.196 and statistically significant at 5% level. This implies that growing firm in respect to growth in profit (PAT) generally rely more on debt than that of less growing firms which have to access to equity sources only since it has no proven track record to attract the market. The existence of relationship between leverage and liquidity implies less risky firms having high liquidity ratio always prefer long-term debt rather than financing from equity sources. The theoretical foundations of capital structure decisions are undoubtedly useful, but its practical application, especially country like India suffers from serious limitations. In India, legal determinants play a significant role in shaping the capital structure of the corporate. Important ones are creditor rights, maintenance of legal reserves and law enforcement. Some studies have shown that debt structure is also determined by how right, are enforced by creditors. Debentures in India are, by definition, secured loans having a floating charge on all the aspect of the company compared to the working capital finance by commercial bank, which generally have a second or inferior charge on assets. Therefore, it becomes sometime important to consider this factor before choosing between short term and long-term debts or choosing debts at all. The companies Act 1956, requires the companies to maintain reserve before distributing profits and also there are provisions, which impose restrictions on the borrowings by the Board of Directors of a company beyond certain limits. Further, the quality of law enforcement and risk assessment also influences capital structure decisions.
It is therefore argued that the financial manager must consider the factors and carefully analyze sector specific attributes before attempting to achieve the so-called optimal capital structure, as they are vital in the Indian context. It has been found that in some Indian firms the capital structure is too rigid to offer any scope for adjustment. The designing appropriate capital structure of the firm is warranted to sustain value of the firm in the hyper competitive corporate environment.
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Reference:


